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ADDITIONAL OBSERVATIONS AND DESCRIPTIONS OF SOME SPECIES OF PLEOCOMA

(Coleoptera, Scarabæidæ)

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The following observations on *Pleocoma* have been accumulated by the writer since the publication of miscellaneous notes on the genus in 1938.[1] For the privilege of studying material from their own collections or collections in their care, the writer is indebted to Mr. Charles Harbison of the San Diego Society of Natural History, Mr. J. C. von Bloeker of the Los Angeles Museum, Dr. J. M. Linsdale of the University of California, Mr. Fred Platt, Mr. J. W. Johnson, Mr. A. T. McClay, and Mr. George Mansfield.

Pleocoma conjungens Horn

This species is but little larger than the coastal form of *P. hirticollis* Schaufuss, and all of the examples at hand are less than 24 mm. in length. Specimens from Ben Lomond, Santa Cruz Mts., Calif., sent for identification by Mr. V. R. Jones, differ from Mr. Davis' figure (Bull. So. Calif. Acad. Sci., 34, pl. 1, f. 10, 1935) by having the lamella of the fifth antennal segment only about one-half as long as that of the sixth. Possibly Mr. Davis' figure was made from a specimen of *hirsuta* Davis rather than of *conjungens* Horn, since in his description of the latter species (l. c., p. 28-29) he states that the lamella of the fifth segment is about five-eighths as long as that of the sixth. In any event it is probable that this character is variable and the Ben Lomond specimens are without a doubt referable to *P. conjungens* Horn.

Pleocoma lucia Linsley, new species

Male. Form oblong-ovate, moderately large, color dark piceous; pubescence golden. *Head* distinctly, rather closely punctate; clypeus reflexed, anterior process moderately shallowly notched at apex, angles moderately obtuse, surface closely punctate, clothed

[1] Linsley, E. G., 1938. Notes on the habits, distribution, and status of some species of *Pleocoma*. Pan-Pac. Ent., 14:49-58, 97-104.

with coarse, erect, golden setæ, vertical horn obtuse, apex very feebly notched; ocular canthi rounded apically, projecting at an angle, punctate and pubescent; antennæ reddish brown, scape conical, second segment moniliform, broader than long, third segment less than three times as long as greatest width, subangulate, fourth segment without a lamella, fifth segment with a very short lamella, lamella of sixth segment about two-thirds as long as that of seventh segment, remaining segments forming club, eleventh segment distinctly shorter than tenth segment. *Pronotum* transverse, shining, widest behind the middle, basal angles rounded, surface moderately finely, not closely punctate, lateral discal impressions deep, very distinct, basal impressions moderate; scutellum glabrous, shining, almost impunctate. *Elytra* oblong-ovate, finely punctate; geminate striæ very feeble. *Legs* hairy; tarsi longer than tibiæ. *Abdomen* with sternites rufo-testaceous, clothed with golden pubescence. Length, 23 mm.

Female. Form elongate oval; color reddish brown; clypeus shallowly emarginate at middle, vertical horn short, broad; antennæ reddish brown, fifth segment angulate, sixth segment with a short lamella, segments seven to eleven forming club; pronotum transverse, finely, not closely punctate, widest at posterior angles, disk without a transverse elevation; scutellum glabrous, almost impunctate; elytra suboval, widest behind middle, surface shallowly, not closely punctate. Length, 40-42 mm.

Holotype, male, No. 5180, Calif. Acad. Sci., Ent., collected by J. M. Linsdale at the Frances Simes Hastings Natural History Reservation, near Jamesburg, Santa Lucia Mountains, Monterey County, California, January 21, 1939. Allotype, female, No. 5181, and one paratype, female (collection of Hastings Natural History Survey) also collected near Jamesburg and submitted by Dr. Linsdale.

This species appears to be related to *P. conjungens* Horn. It may be distinguished by the structure of the male antennæ (club composed of only five full length lamellæ with the lamella of the fifth segment vestigal and that of the fourth segment lacking) and the form of the pronotum (widest behind the middle with prominent basal angles and deep lateral discal impressions).

Pleocoma hirsuta (Davis)

An examination of the type confirms the opinion previously expressed by the writer that *hirsuta* should be regarded as a distinct species (or at the very least a subspecies) and not as a variety of *conjungens*. The type bears the following data: "Ridge

Route, 1-22-33, R. D. Lusk. Found about 7 mi. this side [toward Los Angeles] of the summit [Sandbergs]—hundreds flying through the air just below the snow line about 5:00 P.M."

In the collection of the Los Angeles Museum there is an example from Bee Rock, Griffith Park, Los Angeles, California (Brereton), which appears to be referable to *hirsuta* and which thus slightly extends the known range.

Pleocoma nitida Linsley, new species

Male. Form large, robust, broadly oval, only moderately convex; integument mostly dark brown, legs reddish brown, elytra black, shining; pubescence golden. *Head* coarsely, closely punctate except for a broad smooth band near inner anterior margin of eye; clypeus very coarsely punctate at middle, the punctures becoming smaller laterally and anteriorly, anterior process scarcely reflexed, deeply, obtusely notched, angles acute, produced, vertical horn elongate, sides nearly parallel, apex notched, surface clothed with long hairs; ocular canthi with anterior margin projecting slightly forward from a right angle, apex moderately acute; antennæ with segments reddish and lamellæ dark brown, scape conical, second segment moniliform, third segment elongate, slender, curved, widest at apex, fourth segment with an acute process, fifth segment with a lamella about one-half as long as that of sixth segment, lamella of ninth segment longest, lamellæ of tenth and eleventh segments and those of segments eight, seven, and six, decreasing in length from that of ninth segment. *Pronotum* nearly two and one-half times as wide as greatest length, widest at base, posterior angles prominent, slightly produced, anterior concavity very coarsely, closely punctate, clothed with long hairs, posterior median impression feeble, lateral discal pits not evident; scutellum black, punctation denser along median line, pubescence fine, sparse; legs reddish brown, densely clothed with long, golden hairs. *Elytra* together about one-eighth longer than wide; integument black, shining, sparsely punctate; geminate striæ very feeble, indicated by rows of shallow punctures; sutural striæ shallow. *Abdomen* with sternites reddish brown, densely clothed with golden hairs. Length, 28 mm.

Female. Form broadly oval, widest behind middle; color reddish brown, elytra paler. *Head* moderately coarsely punctate; clypeus dull, anterior process shallowly emarginate, vertical horn low, apex bifid, area behind and on each side of vertical horn smooth, polished, sparsely punctate, antennæ with basal segments pale, club dark brown, fourth segment angulate, segments five to eleven forming club. *Pronotum* shaped much as in male, nearly twice as wide as long, widest at posterior margin, posterior angles

prominent, a little produced, surface moderately, coarsely, closely, irregularly punctate, posterior median impression shallow but distinct; scutellum less coarsely punctate than pronotum, with a few fine hairs. *Elytra* pale reddish brown, surface smooth, polished, shining, finely, sparsely punctate; sutural striæ shallow but distinct; costæ distinct at base, becoming evanescent posteriorly. Length, 31.5 mm.; breadth across apical one-third of elytra, 21 mm.

Holotype, male, No. 5182, Calif. Acad. Sci., Ent., collected one mile south of Atascadero, San Luis Obispo County, California, December 19, 1940, 6:30 A.M.; temperature, 45° F. ["There was a very heavy radiation fog that morning and visibility was very limited. It was caught about three-quarter hour before sunrise at a light on the front porch of a house."] and allotype, female, No. 5183, from 6 miles east of Santa Margarita, San Luis Obispo County, California, on the Calf Canyon Road, January 24, 1941. Both specimens were sent by Mr. George Mansfield, to whom the writer is indebted for the privilege of studying them. Mr. Mansfield writes of the allotype, "I asked the person who gave it to me as to the habitat in which he found it and he describes it as follows: 'It was dug out of ground. Chemise and manzanita brush and also greasewood.' I presume he means *Adenostoma fasciculatum, Arctostaphylos* sp., and *Baccharis* sp."

P. nitida is related to *P. hirsuta* Davis and may prove to be only subspecifically distinct. It differs from *hirsuta* primarily in the wider pronotum, sparsely hairy head, form of the clypeal process, glabrous scutellum, and highly polished elytra. In size, *nitida* is suggestive of *blaisdelli* but may be separated by the broad pronotum with prominent posterior angles, the less convex form, and shining pronotum and elytra. From both *conjungens* and *lucia* it may be distinguished by its larger size, smoother and more shining elytra, rough, pubescent anterior pronotal concavity, and more elongate antennal club. From *lucia* it further differs in the absence of lateral pronotal pits, strong posterior angles of the pronotum, broad, bifid, vertical clypeal horn, and acutely angulate process of clypeus.

Pleocoma sp.

In the collection of the Los Angeles Museum there is a female of the *conjungens* group from Santa Barbara, California, March

9, 1933, collected by Dr. J. A. Comstock. It differs from the female of *nitida* in the form and proportions of the pronotum and antennæ. It probably represents a distinct species although it may prove to be the female of *P. hirsuta* Davis.

The males of the various species mentioned above (as well as that of *blaisdelli* Linsley) will run in Mr. Davis' key (Bull. So. Calif. Acad. Sci., 34: 7-8, 1935) to *Pleocoma conjungens* Horn. Since they are all somewhat similar, the following key has been prepared to facilitate their separation. It is probable that some of the characters used below will prove to be variable when longer series are available for study and in case of discrepancies the full descriptions should be consulted.

Key to Males of Conjungens Group

1. Anterior impression of pronotum a little more coarsely, closely punctate than disk, sparsely hairy; average size about 22 mm. (range 20-23.5 mm.) 2
–. Anterior impression of pronotum coarsely, closely punctate, densely hairy; average size about 26 mm. (range 24.5-28 mm) .. 3
2. Antennal club composed of six full-length lamellæ, lamella of fifth segment at least one-half as long as sixth, fourth segment with a short lamella; ocular canthi almost right-angular, surface polished, impunctate; pronotum widest at basal angles, basal angles prominent, lateral discal impressions very feeble or lacking. Santa Cruz Mountains ..... *conjungens*
–. Antennal club composed of five full-length lamellæ, lamella of sixth segment more than half as long as seventh, lamella of fifth segment vestigial, fourth segment not lamellate; ocular canthi rounded, projecting at an angle, surface closely punctate; pronotum widest behind middle, basal angles rounded, lateral discal impressions deep. Northern Santa Lucia Mountains ..... *lucia*
3. Pronotum shining, posterior angles prominent, slightly produced 4
–. Pronotum dullish, posterior angles obtuse, not produced; greatest width of pronotum about twice greatest length; hairs of upper surface of head mostly confined to vertical horn and anterior process of clypeus. Foothills of Calaveras County. ..... *blaisdelli*
4. Greatest width of pronotum at most twice greatest length; dorsal surface of head very hairy; anterior process of clypeus strongly reflexed, lateral angles acute but scarcely produced, emargination almost right-angular; elytra moderately shining; scutellum thinly clothed with long hairs. Los Angeles County. ..... *hirsuta*

–. Greatest width of pronotum nearly two and one-half times greatest length; dorsal surface of head sparsely hairy; anterior process of clypeus not reflexed; lateral angles very acute, produced, emargination obtuse, rounded; elytra highly polished; scutellum without long hairs. Coast Ranges of San Luis Obispo County.....*nitida*

PLEOCOMA HIRTICOLLIS VANDYKEI Linsley

The description of the female of this subspecies was inadvertently omitted from a previous paper. It is therefore presented at this time.

Female. Form small, convex; color brown. *Head* rugose; clypeus with anterior process broadly rounded at sides, shallowly emarginate at apex, vertical horn very short; ocular canthi triangular; antennæ pale at base, club dark, segments five to eleven forming club, relative proportions of lamellæ much as in male. *Pronotum* about twice as wide as long, coarsely rugoso-punctate, surface with a few fine scattered hairs; scutellum shining, subglabrous, punctured at base; legs short, very hairy. *Elytra* scarcely longer than broad, widest at apical one-third; surface shining, sparsely punctate; sutural striæ shallow; geminate striæ feeble. Length, 22 mm.; width, 14.5 mm.

Neallotype, female, No. 5184, Calif. Acad. Sci., Ent., from Eldridge, Sonoma County, California, May 30, 1917, in the collection of Dr. E. C. Van Dyke.

PLEOCOMA HOPPINGI Fall

Mr. Darwin Tiemann has recently collected five males of this species in Yosemite National Park, making a considerable northern extension of the previously known range. Four of these specimens were taken at Camp Cascades, elevation 4000 feet, on January 18 and 27, 1939, and on January 12, 1940. The fifth specimen was captured at Grouse Creek, elevation 6000 feet, on February 5, 1940.

Mr. Hopping[2] has recorded the probable host of this species as the mountain misery, *Chamæbatia foliolosa* Benth.

PLEOCOMA EDWARDSII LeConte

A male of this rare species was captured at Grass Valley, November 17, 1938, by Mr. William Perry, who kindly presented it to the writer.

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[2] Hopping, R., Proc. Pac. Coast Ent. Soc. (62nd meeting, 1916), p. 137.

PLEOCOMA DUBITALIS Davis

I have recently examined two males of *P. dubitalis dubitalis* Davis from McMinnville, Yamhill County, Oregon, December, 1936, in the collection of Mr. A. T. McClay. This locality is of special interest because it partially fills the existing break in the known distribution of this subspecies (see map, Pan-Pac. Ent., 14:103, 1938).

PLEOCOMA CARINATA Linsley

Through the kindness of Mr. McClay, I have also had the privilege of examining three examples of *P. carinata* Linsley from Dead Indian Soda Springs, Oregon. They were captured in a rainstorm on October 20, 1934, by Mr. L. G. Gentner. Two of the specimens have the anterior longitudinal impression of the pronotum clothed with long, erect hairs, emphasizing a relationship with *P. simi* Davis.

PLEOCOMA SHASTENSIS Van Dyke

Pleocoma shastensis Van Dyke flies in the early morning from about 6 A.M. to about 10 A.M. and again in the afternoon and evening from about 3 P.M. to 9 P.M. Specimens have also been captured at light. Rivers (Ent. Amer., 5:17, 1889), on the authority of Oscar Baron, has recorded the latter habit for *P. fimbriata* LeConte and it has also been recently observed in *P. nitida* Linsley and *P. rickseckeri* Horn, but I am not aware that it has been reported for other species. Davis (Bull. So. Calif. Acad. Sci., 33:129, 1934) states that he was unable to attract *P badia* Fall to automobile headlights, and similar attempts with *P. behrensii* LeConte have also failed. However, Davis also reports an observation by Kenneth Monroe that some "large brown bugs" were flying into a fire during a rain at Pine Flats, near Pasadena, California, and suggests that these may have been *Pleocoma.*

The color of the pubescence in *shastensis* varies in much the same way as has been recorded for *puncticollis* Rivers (Linsley, 1938:97). In the majority of specimens the hairs are brownish black but in occasional examples they are light brown. The latter specimens would run in Davis' key (1935:7) near *simi* Davis but may be distinguished by the glabrous pronotal impression. They also suggest *carinata* Linsley, but in this last species

the pubescence is golden, the form more oval, and the ocular canthi are at right angles to the longitudinal axis of the clypeus.

PLEOCOMA AUSTRALIS Fall

This species is apparently much more widely distributed than has been previously recognized. Prior to 1937, it was known only from Mt. Wilson, California. In the latter year, Moore (Occ. Pap. San Diego Soc. Nat. Hist., 2:83, 1937) recorded specimens from Hot Springs Mountain, near Warner's Hot Springs, San Diego County, California. These specimens have recently been studied and the identification confirmed. Through the efforts of Mr. F. R. Platt, a portion of the existing gap in the known distribution has been filled by the capture of a fine series of specimens at Lake Hemet, San Jacinto Mountains, Calif., on October 26, 1940. This is the first record of a species of *Pleocoma* from this range of mountains[3]. The range of *P. australis* has also been extended eastward by the capture of a male and female by Mr. J. W. Johnson at San Sevaine Ridge, near Lytle Creek, San Gabriel Mountains, San Bernardino County, California.

PLEOCOMA BEHRENSII LeConte

Additional data on the distribution of this species have been obtained through the capture of a male and female at Sharp Park, San Mateo County, California, October 30, 1940, by W. H. Lange, Jr. The female is smaller than usual for *behrensii*, with the geminate striæ more strongly impressed and the pronotum more densely and deeply punctate. The male, like others from San Mateo County as well as one at hand from Angel Island, San Francisco Bay, differs from those of typical *behrensii* by having the pronotum a little more closely punctate and the integument is slightly duller and more hairy. It is possible that the San Mateo County form represents a subspecies of *P. behrensii*.

PLEOCOMA PUNCTICOLLIS Rivers

In the collection of the San Diego Society of Natural History there are several examples of this species from Ramona, San Diego County, California, collected by John W. Snyder and also specimens from Alamo, Lower California, December 5, 1926.

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[3] In the summer of 1939, Mr. E. S. Ross and the writer found *Pleocoma* elytra at Herkey Creek, not far from Lake Hemet, but it was not possible to identify the species involved.